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U.S. Patent Application Serial No. 09/624,796  
Attorney Docket No. 00-4017

### REMARKS

In the Office Action, the Examiner rejected claims 1, 3-11, and 33-38 under 35 U.S.C. § 112, second paragraph, as indefinite; rejected claims 1-3, 8-15, 18, 20-25, 28, and 30-38 under 35 U.S.C. § 103(a) as unpatentable over KUBINSZKY et al., "Emulation of Ad-Hoc Networks on IEEE 802.11," Microwaves, Radar and Wireless Communications, 2000, Vol. 2, pp. 447-450; and rejected claims 4-7, 16, 17, 19, 26, 27, and 29 under 35 U.S.C. § 103(a) as unpatentable over KUBINSZKY et al. in view of SCHULT et al., "Routing in Mobile Ad Hoc Networks," Military Communications Conference Proceedings, 1999, Vol. 1, pp. 10-14.

By way of this amendment, claims 33 and 34 have been amended to improve form. Claims 1- 38 remain pending.

Claims 1, 3-11, and 33-38 were rejected under 35 U.S.C. § 112, second paragraph, as allegedly indefinite. In particular, the Examiner alleged that claims 1, 3-11, and 34-38 contain objectionable functional language, it is unclear as to what device in claim 34 performs "the testing protocol," and claim 33 is indefinite because claim 33 should depend from claim 24 and not claim 34 (Office Action, pp. 2-3). Applicants respectfully traverse the rejection under 35 U.S.C. § 112, second paragraph, with respect to claims 1, 3-11, and 34-38.

The Examiner alleged that the language "configured to" in claims 1, 3-11, and 34-38 renders these claims indefinite because the language is functional (Office Action, pp. 2-3). Applicants respectfully disagree.

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As MPEP § 2173.05(g) points out, a functional recitation, such as "configured to," is an attempt to define something by what it does, rather than by what it is. MPEP § 2173.05(g) correctly points out that there is nothing inherently wrong with defining an invention in functional terms. In fact, as the Court of Customs and Patent Appeals (C.C.P.A.) held in *In re Swinehart*, 439 F.2d 210, 169 USPQ 226 (C.C.P.A. 1971), functional language does not, in and of itself, render a claim improper.

MPEP § 2173.05(g) directs an Examiner to evaluate and consider a functional limitation, such as "configured to," for what it fairly conveys to a person of ordinary skill in the pertinent art in the context in which it is used. As MPEP §2173.05(g) points out, the C.C.P.A. has provided clarification on the issue of functional limitations in *In re Venezia*, 530 F.2d 956, 189 USPQ 149 (C.C.P.A. 1976). In considering a limitation, "a pair of sleeves \*\*\* each sleeve of said pair adapted to be fitted over the insulating jacket of one of said cables", *Id.* at 151, the court held:

Rather than a mere direction of activity to take place in the future, this language imparts a structural limitation to the sleeve. ... A similar situation exists with respect to the "*adapted to be affixed*" and "*adapted to be positioned*"... "*may be slideably positioned*" ... "*slideably repositioned*" ... this language also defines present structure or attributes ... a present structural configuration of the housing is defined in accordance with how the housing interrelates with the other structures in the completed assembly. *We see nothing wrong in defining the structures of the components of the completed connector assembly in terms of the interrelationship of the components, or the attributes they must possess* ... One skilled in the art would have no difficulty determining whether or not a particular collection of components infringe the collection of interrelated components defined by these claims

*Id.* at 151-152 (emphasis added).

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In the present case, Applicants' recitations, *inter alia*, of: "a simulation controller configured to transmit network configuration information," "a traffic generator configured to generate, in response to the configuration information, traffic during the protocol testing," "an emulator configured to simulate transmission characteristics of the network," and "an analysis device configured to monitor the one or more nodes during the protocol testing and analyze the monitoring," in claim 1, impart structural limitations in terms of the interrelationship of the elements or the attributes that they possess, as specifically approved of by the court in *In re Venezia*, supra. Therefore, based on at least the foregoing, Applicants submit that the use of "configured to" does not render claim 1 indefinite.

Similar comments can be made for claims 3-11 and 34-38.

Accordingly, Applicants respectfully request reconsideration and withdrawal of the rejection of claims 1, 3-11, and 34-38 under 35 U.S.C. § 112, second paragraph.

Further with respect to claims 34-38, the Examiner alleged that "there is insufficient structure to provide for the functional language. Claim 35-38 recites a 'system for performing testing protocol for an ad hoc network'. The specification discloses that the system requires a control 110 (figure 1) to mastermind the operation. However, claim 34 does not associate the above limitation. Thus the scope is not clear in the system of claim 34 what device is included in order that the system is capable of performing the testing protocol" (Office Action, pg. 3). Applicants disagree.

Contrary to the Examiner's allegation, Applicants' disclosure in no way discloses or suggests that a system for testing protocols *requires* a simulation controller 110, as

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illustrated in Applicants' Fig. 1, to "mastermind" the testing of protocols. Applicants strenuously object to the Examiner's mischaracterization of Applicants' disclosure. Nevertheless, in an attempt to expedite prosecution, Applicants have amended the preamble of claim 34 to recite "A system for simulating an ad hoc network, the ad hoc network having a plurality of ad hoc nodes."

For at least the foregoing reasons, Applicants request that the rejection of claims 34-38 under 35 U.S.C. § 112, second paragraph, be reconsidered and withdrawn.

The Examiner rejected claim 33 under 35 U.S.C. § 112, second paragraph, as indefinite because claim 33 should depend from claim 24 and not claim 34. Applicants have amended claim 33 herewith to correct the dependency of that claim. Accordingly, Applicants request that the rejection of claim 33 under 35 U.S.C. § 112, second paragraph, be reconsidered and withdrawn.

Claims 1-3, 8-15, 18, 20-25, 28, and 30-38 were rejected under 35 U.S.C. § 103(a) as allegedly unpatentable over KUBINSZKY et al. Applicants respectfully disagree.

Claim 1 recites a system for testing protocols for a network having a plurality of network devices. The system includes a simulation controller configured to transmit network configuration information and one or more nodes, where each node is configured to emulate at least one of the plurality of network devices. Each node includes a traffic generator configured to generate, in response to the configuration information, traffic during the protocol testing, and an emulator configured to simulate transmission characteristics of the network. The system further includes an analysis device configured

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to monitor the one or more nodes during the protocol testing and analyze the monitoring. KUBINSZKY et al. does not disclose or suggest this combination of features.

For example, KUBINSZKY et al. does not disclose or suggest a simulation controller configured to transmit network configuration information, as required by claim 1. The Examiner alleged that KUBINSZKY et al.'s network simulator (NS) corresponds to the recited simulation controller (Office Action, pg. 4). The Examiner admitted that KUBINSZKY et al. does not disclose the NS transmitting network configuration information, but alleged that "Kubinszky et al disclose that there are different routing protocols available (Page 448, lines 1-8); therefore, for simulating all the available protocols, a skilled artisan would have been motivated to have the simulation controller (Server NS) designed so that it transmits to the nodes of ad hoc network to inform which protocol the network is configured to run in each particular simulation" (Office Action, pp. 4-5). Applicants disagree.

KUBINSZKY et al. discloses the use of the NS to examine "a wide variety of network protocols including TCP, routing protocols" (pg. 448, line 2). KUBINSZKY et al. also discloses that the NS can be used as an emulator by connecting the NS to a real computer network (pg. 448, lines 8-9). As shown in Figs. 1, 3, and 4, emulation tests of networks may involve the use of two traffic generators (TGs) that generate real traffic by running end-to-end applications (e.g., ftp and ping) connected to a server running the NS, which emulates network nodes (pg. 448, lines 15-28).

As correctly acknowledged by the Examiner, KUBINSZKY et al. does not disclose the NS transmitting network configuration information. Moreover, since

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KUBINSZKY et al.'s NS emulates the nodes in the network, there would be no need to transmit network configuration information from the NS. Therefore, the Examiner's allegation that one skilled in the art would have been motivated to have KUBINSZKY et al.'s NS transmit network configuration information to the nodes of the network is flawed.

KUBINSZKY et al. does not further disclose or suggest one or more nodes, where each of the nodes includes a traffic generator configured to generate, in response to the configuration information, traffic during the protocol testing and an emulator configured to simulate transmission characteristics of the network, as also required by Applicants' claim 1. The Examiner alleged that the emulated nodes in KUBINSZKY et al. inherently "comprise a traffic generator to generate data in a suitable protocol used by the tested ad hoc network (based on the received data from the traffic generators TG)" (Office Action, pg. 4). Applicants disagree.

MPEP § 2112 requires the Examiner, when relying on the theory of inherency, to provide "a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic necessarily flows from the teachings of the applied prior art." See *Ex parte Levy*, 17 USPQ2d 1461, 1464 (Bd. Pat. App. & Inter. 1990). The Examiner has not provided the necessary showing articulated in MPEP § 2112 to support the inherency assertion. The Examiner's conclusory statement that KUBINSZKY et al.'s emulated nodes must inherently have traffic generators is insufficient under MPEP § 2112 for establishing inherency. The Examiner has not pointed to any section of the KUBINSZKY et al. disclosure that supports this

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allegation. Moreover, the disclosure of KUBINSZKY et al. seems to teach away from such a feature. KUBINSZKY et al. specifically discloses that it is preferred to connect the NS to a real computer network since "it is really difficult to generate real-like traffic with the simulator" (pg. 448, lines 10-11).

The Examiner's conclusory statement that the nodes emulated by KUBINSZKY et al.'s NS must inherently include a traffic generator to generate data in a suitable protocol based on received data from the traffic generators is unsupported by the KUBINSZKY et al. disclosure. The Examiner's allegation appears to suggest that the KUBINSZKY et al.'s traffic generators transmit network configuration information to the nodes emulated by the NS. The KUBINSZKY et al. disclosure in no way supports this allegation.

With respect to each of the nodes including an emulator, the Examiner admitted that KUBINSZKY et al. does not disclose this feature and alleged that "it would have been obvious ... to make the simulation controller (Server NS) transmits network configuration information and add an emulator to the node for simulating transmission characteristics of the network" (Office Action, pg. 5). The Examiner has failed to establish a *prima facie* case of obviousness. The Examiner is required to explain why one skilled in the art would have been motivated to incorporate this feature into the KUBINSZKY et al. system. The Examiner's conclusory statement that it would be obvious to add an emulator to the node for simulating transmission characteristics of the network fails to logically explain why one skilled in the art would have been motivated to incorporate this feature into the KUBINSZKY et al. system. Accordingly, a *prima facie* case of obviousness has not been established.

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For at least the foregoing reasons, Applicants submit that claim 1 is patentable over KUBINSZKY et al.

Claims 2, 3, and 8-12 depend from claim 1. Therefore, these claims are patentable over KUBINSZKY et al. for at least the reasons given above with respect to claim 1. Moreover, these claims recite additional features not disclosed or suggested by KUBINSZKY et al.

For example, claim 3 recites that the simulation controller is further configured to transmit, prior to the protocol testing, a test scenario to each of the one or more nodes, the test scenario providing configuration information to the one or more nodes. The Examiner alleged that "after modifying the network in figure 3 for testing multiple protocols, it is inherent that the (test scenario providing) configuration information is transmitted to the nodes prior to the protocol testing in order to let the node how to process the test data" (Office Action, pg. 5). Applicants disagree.

As set forth above, MPEP § 2112 requires the Examiner, when relying on the theory of inherency, to provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic necessarily flows from the teachings of the applied prior art. The Examiner has not provided the necessary showing articulated in MPEP § 2112 to support the inherency assertion. KUBINSZKY et al. does not disclose or suggest transmitting a test scenario. Therefore, it is unclear how the Examiner can reasonably allege that KUBINSZKY et al.'s NS inherently transmits, prior to the protocol testing, a test scenario to each of the one or more nodes, where the test scenario provides configuration information to the one or more nodes, as required by



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claim 3. As set forth above, the NS emulates the nodes in the network. Therefore, there would be no reason to transmit a test scenario to each of the one or more nodes, as required by Applicants' claim 3. The Examiner has not pointed to any section of the KUBINSZKY et al. disclosure that supports this allegation.

For at least these additional reasons, Applicants submit that claim 3 is patentable over KUBINSZKY et al.

Claim 8 recites that the simulation controller is configured to transmit stimuli to each of the one or more nodes, where the stimuli causes the one or more nodes to cease operation, malfunction, begin erroneous transmissions, or start or stop collecting testing information. The Examiner admitted that KUBINSZKY et al. does not disclose this feature and alleged that "Kubinszky et al disclose, in testing a live network, a real time scheduler is used to that all the tasks are done at the right moment (Page 448, lines 12-15). This suggestion would have motivated a person ... to transmit stimuli (control signal) to the nodes in order to indicate the nodes when the test should be start or stops in order to monitor the testing a live network" (Office Action, pp. 5-6). Applicants disagree.

Contrary to the Examiner's allegation, the mere fact that KUBINSZKY et al. discloses the use of a real time scheduler would in no way lead one skilled in the art to modify the operation of KUBINSZKY et al.'s NS to transmit stimuli to each of the one or more nodes, where the stimuli causes the one or more nodes to cease operation, malfunction, begin erroneous transmissions, or start or stop collecting testing information. With respect to motivation, the Examiner alleged "it would have been

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obvious ... to transmitting stimuli to the nodes, and the stimuli cause one or more nodes to (cease operation, malfunction, begin erroneous transmissions, or) start or stop collecting testing information" (Office Action, pg. 6). Once again, the Examiner has not established a *prima facie* case of obviousness. The Examiner did not logically explain why one skilled in the art would have been motivated to incorporate the feature of Applicants' claim 8 into the KUBINSZKY et al. system. Without the proper motivation, a *prima facie* case of obviousness cannot be established.

For at least these additional reasons, Applicants submit that claim 8 is patentable over KUBINSZKY et al.

Claim 10 recites that at least one of the one or more nodes is configured to emulate two or more of the plurality of network devices. The Examiner alleged that "Kubinszky et al disclose each node in the ad hoc network can be some desktop machines such as printers or projectors (Page 447, 3<sup>rd</sup> paragraph). Kubinszky et al also disclose the test can be done on a live network (Page 448, line 12). The Examiner is in the position one of the node emulates two or more device in the case of testing a live network" (Office Action, pg. 6). Applicants disagree.

If the Examiner intends to suggest that one of the network devices in the real network emulates two or more network devices, this position is unsupported by the KUBINSZKY et al. disclosure. KUBINSZKY et al. in no way discloses or suggests that any of the network devices in the real network emulates another network device, let alone emulating two or more network devices. The Examiner's position is unsupported by the KUBINSZKY et al. disclosure.

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For at least these additional reasons, Applicants submit that claim 10 is patentable over KUBINSZKY et al.

Claim 11 recites that the one or more nodes are configured to collect, during the protocol testing, testing information, and transfer the testing information to the analysis device. With respect to these features, the Examiner alleged that "for the ad-hockey displays the testing result as Kubinszky et al discloses on page 449 and 450, it is inherent that the nodes collect and transfers the testing information to the analysis device" (Office Action, pg. 7). Applicants disagree.

MPEP § 2112 requires the Examiner, when relying on the theory of inherency, to provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic necessarily flows from the teachings of the applied prior art. The Examiner has not provided the necessary showing articulated in MPEP § 2112 to support the inherency assertion. The mere fact that simulation results can be displayed in no way means that the nodes emulated by the NS inherently collect, during the protocol testing, testing information, and transfer the testing information to the analysis device. The Examiner has not pointed to any section of the KUBINSZKY et al. disclosure that supports this allegation.

For at least these additional reasons, Applicants submit that claim 11 is patentable over KUBINSZKY et al.

Independent claim 13 recites features similar to those described above with respect to claim 1. Therefore, claim 13 is patentable over KUBINSZKY et al. for reasons similar to those given above with respect to claim 1.

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Independent claim 14 recites a method for testing protocols for a network having a plurality of communication devices. The method includes selecting protocol configuration settings to be tested; establishing the protocol configuration settings in each of one or more nodes, where each node is configured to emulate at least one of the plurality of communication devices; simulating operation of the network; monitoring the operation; and analyzing the monitoring to determine protocol suitability. KUBINSZKY et al. does not disclose or suggest this combination of features.

The Examiner alleged that each of the features recited in Applicants' claim 14 is inherent in the KUBINSZKY et al. system (Office Action, pp. 7-8). Applicants disagree.

As set forth in detail above, MPEP § 2112 requires the Examiner, when relying on the theory of inherency, to provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic necessarily flows from the teachings of the applied prior art. The Examiner's conclusory allegation that "in order to let the server NS simulates different routing protocol as disclosed in the rejection of claim 1," the features of claim 14 are necessarily inherent fails to provide the necessary showing articulated in MPEP § 2112. For example, KUBINSZKY et al. discloses that in those situations where the NS is connected to a real network, the NS may act as an emulator (pg. 448, lines 8-9). In this situation, the NS does not simulate operation of the network, an act required by claim 14. Instead, the real network operates as it normally would. Therefore, this act is not an inherent part of the KUBINSZKY et al. system. If this position is maintained, Applicants request that the Examiner logically

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explain the basis for the alleged inherency with respect to each feature of Applicants' claim 14.

For at least the foregoing reasons, Applicants submit that claim 14 is patentable over KUBINSZKY et al.

Claims 15, 18, and 20-23 depend from claim 14. Therefore, these claims are patentable over KUBINSZKY et al. for at least the reasons given above with respect to claim 14. Moreover, these claims recite features similar to features described above with respect to claims 2, 3, and 8-12. Therefore, Applicants submit that claims 15, 18, and 20-23 are further patentable over KUBINSZKY et al. for reasons similar to those given above with respect to claims 2, 3, and 8-12.

Independent claim 24 recites features similar to features described above with respect to claim 14. Therefore, Applicants submit that claim 24 is patentable over KUBINSZKY et al. for reasons similar to those given above with respect to claim 24.

Claims 25, 28, and 30-33 depend from claim 24. Therefore, these claims are patentable over KUBINSZKY et al. for at least the reasons given above with respect to claim 24. Moreover, these claims recite features similar to features described above with respect to claims 2, 3, and 8-12. Therefore, Applicants submit that claims 25, 28, and 30-33 are further patentable over KUBINSZKY et al. for reasons similar to those given above with respect to claims 2, 3, and 8-12.

Independent claim 34 recites features similar to features described above with respect to claim 1. Therefore, claim 34 is patentable over KUBINSZKY et al. for reasons similar to those given above with respect to claim 1.

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Claims 35-38 depend from claim 34. Therefore, these claims are patentable over KUBINSZKY et al. for at least the reasons given above with respect to claim 34.

Moreover, these claims recite features similar to features described above with respect to claims 2, 3, and 8-12. Therefore, Applicants submit that claims 35-38 are further patentable over KUBINSZKY et al. for reasons similar to those given above with respect to claims 2, 3, and 8-12.

Claims 4-7, 16, 17, 19, 26, 27, and 29 were rejected under 35 U.S.C. § 103(a) as unpatentable over KUBINSZKY et al. in view of SCHULT et al.

Claims 4-7 depend from claim 1. The disclosure of SCHULT et al. does not remedy the deficiencies in the disclosure of KUBINSZKY et al. set forth above with respect to claim 1. Therefore, claims 4-7 are patentable over KUBINSZKY et al. and SCHULT et al., whether taken alone or in any reasonable combination, for at least the reasons given above with respect to claim 1.

Claims 16, 17, and 19 depend from claim 14. The disclosure of SCHULT et al. does not remedy the deficiencies in the disclosure of KUBINSZKY et al. set forth above with respect to claim 14. Therefore, claims 16, 17, and 19 are patentable over KUBINSZKY et al. and SCHULT et al., whether taken alone or in any reasonable combination, for at least the reasons given above with respect to claim 14.

Claims 26, 27, and 29 depend from claim 24. The disclosure of SCHULT et al. does not remedy the deficiencies in the disclosure of KUBINSZKY et al. set forth above with respect to claim 24. Therefore, claims 26, 27, and 29 are patentable over

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KUBINSZKY et al. and SCHULT et al., whether taken alone or in any reasonable combination, for at least the reasons given above with respect to claim 24.

In view of the foregoing amendments and remarks, Applicants respectfully request the Examiner's reconsideration of this application, and the timely allowance of the pending claims.

To the extent necessary, a petition for an extension of time under 37 C.F.R. § 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account No. 07-2347 and please credit any excess fees to such deposit account.

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